

**REMARKS**

Claims 13, 16-18, 22 and 24 are pending. By this Amendment, claim 18 is amended, and claim 23 is canceled.

**I. Rejections Under 35 U.S.C. §103(a)**

The Office Action rejects claims 13, 16-18, and 22-24 under 35 U.S.C. §103(a) over Nagai et al. (U.S. Patent No. 5,846,276) (Nagai) in view of Amer et al. (U.S. Patent No. 6,331,075) (Amer); rejects claim 25 under 35 U.S.C. § 103(a) over Nagai in view of Amer in further view of Kirino et al. (U.S. Patent No. 6,730,421) (Kirino); and rejects claims 13 and 16-24 over Kishimoto et al. (U.S. Patent No. 5,693,685) (Kishimoto) in view of Amer.

Applicants respectfully traverse these rejections.

**A. The Method of Amer is Limited to the Measurement of Thermal Conductivity of Thin Films**

Applicants respectfully submit that the method of measuring thermal conductivity taught in Amer is limited to use with thin films. The title states that the invention is a "Device and Method For Measuring Thermal Conductivity of Thin Films." The field of invention states that "[t]his invention relates to a device and method for measuring the thermal conductivity of thin films of materials. . . ." The description of the related states the purpose of the invention, namely, "a measurement technique is needed to measure, both steady state and transient, the thermal conductivity of thin films of materials, such as paints, that are 50-150  $\mu\text{m}$  thick. . . ."

Several features of the device and method disclosed in Amer evidence that the method is limited to use with thin films. For instance, Amer requires the use of conductive slabs in which six small, high resolution thermocouples are embedded to accurately measure the small temperature differences (see col. 3, lines 13-15 and col. 5, lines 17-20). This feature is required because samples measured by the Amer device are highly sensitive to ambient

conditions due to the small size of the thin film thickness. Additionally, in Amer the thin film samples are placed in, and the thermal conductivity measurements are performed in, a bell-jar maintained at very low pressure (see col. 4, lines 29-38). This feature is required to protect the thin film from ambient conditions, especially to protect against radiant heat losses. Further, Amer teaches that the tested specimen can be applied directly to one of the conductive slabs (see col. 3, lines 61-64) and the only specific example given for such a directly applied specimen is thin films such as paint.

B. The Method Recited in the Claims is Not Directed to the Measurement of Thermal Conductivity of Thin Films

The technical field section of the present application states,

The present invention relates to a method for measurement of thermal conductivity of a honeycomb structure, which can measure the thermal conductivity of a honeycomb structure in the shape of the honeycomb structure per se without preparing a test specimen or the like.

The method recited in the claims addresses a long-standing need to have a method for accurately determining the thermal conductivity of a honeycomb structure without having to prepare a specimen in a way that damages the honeycomb structure. See, for example, claim 18, which recites "keeping the whole honeycomb structure in a steady temperature state . . . ." In contrast, the Amer method, at best, would require damaging a honeycomb structure to prepare a specimen having a thickness of 50-150  $\mu\text{m}$  thick. Thus, Amer does not address the problem of measuring the thermal conductivity of a honeycomb structure without the necessity of preparing a test specimen. Further, a specimen of this type cannot be reasonably described as a thin film such as, for example, paint.

C. The Amendment to Claim 18 Further Distinguishes From The Applied Prior Art

Independent claim 18 has been amended to recite the feature of "covering exposed sides of the honeycomb structure with heat-insulating material." Support for this feature is found in the specification at least at page 12, lines 6-8.

Applicants respectfully submit that there is no objective reason to combine such step with the method taught in Amer. Amer does not disclose a step of covering exposed sides with heat-insulating material. Applicants submit that the amendment to independent claim 18 further distinguishes the recited claims over Nagai and Amer.

D. The Other References Do Not Overcome The Deficiencies of Nagai and Amer

Applicants submit that the other cited references, Kirino and Kishimoto, do not overcome the deficiencies of Nagai and Amer. Neither Nagai, Kirino nor Kishimoto disclose a method capable of determining the thermal conductivity of a honeycomb structure. Applicants respectfully submit that for at least the reasons described above there would have been no objective reason to combine the teachings of these references with Amer.

Applicants respectfully submit that the rejections of claims 13, 16-18, 22 and 24 under 35 U.S.C. §103(a) should be withdrawn. Prompt and favorable consideration on the merits is respectfully requested.

**II. Conclusion**

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of the pending claims are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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